RESPONSE TO OFFICE ACTION

This correspondence is in response to office action mailed 06-06-05 rejecting my U. S. Patent Application No. 10/694,137 of Brian F. Jackman filed 10/27/2003 Titled: CARTRIDGE NOZZLE SEAL OPENED BY INTERNAL CARTRIDGE PRESSURE as being obvious and unpatentable over Smith (U. S. 4,830,231) in view of Galbierz (U. S. 3,071,294).

OBVIOUSNESS REJECTION FACTUALLY INCORRECT

I, Brian F. Jackman, inventor in the above named patent application respectfully and specifically disagree with the findings cited by the examiner for rejecting claims 1 -17 of my application based on obviousness as being factually incorrect based on the following :

It is stated on Pg. 3 lines 8 & 9 of the rejection that in reference to claims 1 and 2 of my application that Smith discloses that "along with seal (fig 3) being of sufficient weakness to allow the seal (layer 46) to break open only in the configuration of the breaking pattern (x shapes in layer 46 in fig 3)." (with valve disk layer 46 being characterized as a seal).

This is inaccurate. Smith states in Col. 3 line 15 that the valve disk layer 46 is the main structural component of the end disk 32 of his cartridge 10 and does not constitute a seal. Smith additionally states in Col. 4 lines 44 thru 54 and Col. 6 lines 31 thru 33 that the only component of his invention that functions as

a seal is the releasable foil strip 42. The releasable strip 42 is bonded to the polyethylene protection disk layer 40 with a releasable adhesive that allows the seal strip 42 to be removed from the end disk 32 prior to the pressurization of the cartridge 10 and is only present to keep the valve area 50 clean and free from contaminants until the seal strip 42 is removed. Additionally, Smith states in Col. 3 Lines 54 thru 59 that the x shapes in layer 46 are valve openings 52. These valve openings 52 are formed by a pair of intersecting slits made in a crosshair pattern that intersect at their centers forming an x shape and do not function as a breaking pattern. Theses slits are cut completely through the valve disk layer 46 and do not break open when the cartridge 10 is pressurized by advancing the plug 26 with the dispensing gun 14. The valve openings 52 spread open when the cartridge 10 is pressurized and then return to a closed position to prevent leaking when the pressure is released as Smith further clarifies in Col. 3 Line 68 and Col. 4 Lines 1 thru 8.

It is stated on Pg. 3 lines 10 thru 13 of the rejection that in reference to claims 1 and 2 of my application that "Smith discloses an improved multi layered self opening closure seal (fig 3) for sealing over the interior opening (open end of dispensing gun 14, fig 1), cartridge (10) constructed of a first layer of unbroken (42, fig 1) frangible material (42, made of foil)"

This is inaccurate. Smith states in Col. 4 lines 49 thru 51 that the releasable foil sealing strip 42 does not break open when the cartridge 10 is pressurized, (i. e. frangible meaning breakable). As additionally stated by Smith in Col. 4 lines 44 & 45, the sealing strip 42 is bonded to the end disk 32 by an adhesive coating that is of a releasable type. The design of the end disk 32 calls for the releasable strip 42 to be peeled from the end disk 32 before the cartridge 42 is pressurized as Smith further details in Col. 4 lines 44 thru 51.

It is stated on Pg. 3 lines 12 thru 15 of the rejection that in reference to claims 1 and 2 of my application that "constructed of a first layer of unbroken (42, fig 1) frangible material (42, made of foil) that is bonded to an additional layer (40) of material that contains at least one cut (opening 44) forms a breaking pattern (circle) that turns the additional layer (layer 46) into a break and tear template layer (

layer 46)"

This statement is inconsistent. It is stated on Pg. 3 lines 8 and 9 of the rejection that the only breaking pattern in layer 46 of the Smith patent were the 3 x shapes 52 in layer 46 as shown in Fig. 3, yet in lines 12 thru 15 in the rejection, the circular opening 44 in layer 40 is also being categorized as a fourth breaking pattern that would also break open at the inner circular boundary where the paperboard layer 36 and polyethylene layer 40 composite are bonded to the template layer 46 when the cartridge 10 is pressurized.

The valve disk layer 46 could not break open along the inner circular boundary line where the paperboard stiffening layer 36 and the polyethylene shield layer 40 composite ends when the cartridge 10 is pressurized because the valve disk layer 46 does not contain a circular slit or other weakening means at that boundary. Nowhere is it stated in the Smith patent that the circular opening is also a slit valve as clarified by Smith in Col. 3 lines 65 thru 68 and Col. 4 lines 1 thru 8.

Additionally, it would be also be obvious to one skilled in the art that attempting to cut a complete circular slit in the valve disk layer 46 in register with the circles 38 and 44 to allow the disk valve layer 46 to break open at the inner circular boundary, would at the same time, cause the circular center of the valve disk layer 46 to fallout during the cutting procedure or in later handling. If this drawback could be overcome, an additional problem is that the central valve area 50 would burst out completely and contaminate the contents or clog the nozzle when the cartridge was pressurized.

It is stated on Pg. 3 lines 13 thru 20 of the rejection that in reference to claims 1 and 2 of my application that "at least one cut opening (opening 44) forms a breaking pattern (circle) that turns the additional layer (layer 46) into a break and teal template layer (layer 46) and that when bonded to the first frangible layer (42) strengthens the surface area of the first frangible layer (42) everywhere except in the area of the breaking pattern (breaking pattern of x shapes in 46) by leaving only the first frangible layer (42) covering over the cut configuration of the breaking pattern (x shapes in layer 46, and circle in layer 36) of the additional template layers (40 and 46)."

This statement is inconsistent. Smith states in Col. 2 lines 1 thru 6 and Col. 3 lines 21 thru 29 that layer 36 is a layer of paperboard with an outer layer of polyethylene 40 bonded to it to shield the paperboard layer 36 from oils and other damaging substances. The paperboard layer 36 is bonded to the valve disk layer 46 by the adhesive layer 48 to provide stiffness to the periphery of the end disk 32 so that the end disk 32 can be handled by biscuit sorters during assembly of the cartridge 10 and does not constitute nor could it perform as, any type of template layer 40. The frangible layer (releasable layer) 42 does not come into contact with the stiffening layer 36 when the frangible layer (releasable layer) 42 is bonded over the circular opening 38 in layer 36 because layer 36 is sandwiched between the valve layer 46 and the protection disk 40. Additionally, if both the 3 x shapes 52 and the circle 38 are being categorized as breaking patterns, which should break first ?

It is stated on Pg. 3 lines 18 thru 21 of the rejection that in reference to claims 1 and 2 of my application that "by leaving only the first frangible layer (42) covering over the cut configuration of the breaking pattern (x-shapes in layer 46, and circle inlayer 36) of the additional template layers (40 and 46) which leaves a weakness in the multi layered seal only in the area of the breaking pattern (circle in layer 40 and x-shapes in layer 46)."

This statement is inaccurate. In order for the peel away layer 42 to perform as a frangible layer and break open when the cartridge 10 is pressurized, the peel away layer 42 would have to be bonded to the valve disk layer 46 and / or circular disk layer 40 with a permanent non releasable adhesive. Smith states in Col. 4 lines 44 & 45 that the adhesive coating on the peel away layer 42 is a releasable type that would result in the layer 42 separating from the valve disk layer 46 and / or the circular disk layer 40 when the cartridge 10 contents are pressurized and forced out through the valve openings 52.

It is stated on Pg. 4 lines 9 thru 13 of the rejection that in reference to claims 1 and 2 of my application that "It would have been obvious to one of ordinary skill in the art to modify the dispensing gun of Smith by replacing the peel away seal with a frangible exterior layer bonded to an interior opening of a nozzle as taught by Galbrierz in order to simplify the process for the user by eliminating the peel away step

of the seal from the cartridge, and in order to provide better control of the flow pattern of the material being dispensed".

This statement is inaccurate. Smith states in Col. 2 line 63 thru 65 that the dispensing gun 14 is not part of his invention. The title of the Smith patent is COMPOSITE DISK VALVE FOR DISPENSING CARTRIDGES. Neither the end disk 32 nor the releasable seal 42 is attached to the dispensing gun 14 in any way. Replacing the releasable seal 42 with the frangible exterior layer 24 of Galbierz does not modify the dispensing gun 14.

Presuming that what is meant is that "it would have been obvious to one of ordinary skill in the art to modify the cartridge dispenser 10 of Smith by replacing the peel away seal 42 with a frangible exterior layer 24 bonded to an interior opening 18 of a nozzle 15 as taught by Galbierz in order to simplify the process for the user by eliminating the peel away step of the seal from the cartridge, and in order to provide better control of the flow pattern of the material being dispensed."

Modifying the end disk 32 of Smith by replacing the releasable seal 42 with the frangible seal 24 of Galbierz will not reproduce the pressure activated self opening frangible nozzle seal as disclosed in the specification of my application for reasons described herein. This will be obvious with an accurate analysis of the multi layered structure of Smith's end disk 32 and the purpose of each layer and its role in obtaining the overall results that allows the end disk 32 to function as Smith describes.

Smith discloses in Col. 4 lines 44 thru 52 that after the removal of the releasable seal 42, both the polyethylene layer 40 and the paperboard layer 36 remain bonded to the exterior of the polyester valve layer 46 making up the end cap 32. The outermost polyethylene layer 40 is bonded to the paperboard layer 36 to prevent oils and contaminants from damaging the paperboard layer 36 as Smith discloses in Col. 3 lines 30 thru 34 while also providing a compatible surface that allows the releasable seal 42 to be cleanly and easily peeled from the cartridge 10 prior to using, as Smith discloses in Col. 3 lines 34 thru 36. The paperboard layer 36 provides stiffness to the end disk 32 so it can be handled by biscuit sorters when the cartridge 10 is assembled as Smith discloses in Col. 3 lines 21 thru 26. The adhesive layer 48 is a permanent adhesive that bonds the paper board layer 36 to the polyester valve layer 46 as Smith discloses in Col.3 lines 45 thru 47.

When the polyethylene layer 40 and the paperboard layer 36 are bonded to the polyester valve disk

layer 46 by the adhesive layer 48, the center openings 44 and 38 in the layers 40 and 36, and the absence of the adhesive layer 48 in the central valve area 50, create a circular depression in the central valve area 50 of the end disk 32 of a depth that equals the combined thickness of the layers 48, 36, and 40, as Smith shows in Fig. 2.

Smith states in Col.4 lines 45 thru 51 that the releasable seal 42 is bonded to the polyethylene disk 40. When the releasable seal 42 is bonded to the polyethylene layer 40 the depression formed the center openings 44 and 38 create a gap between the valve disk layer 46 and the releasable seal 42 in the central valve area 50 that also equals the combined thickness of layers 48, 36, and 40. This gap is of no consequence in regards to the proper functioning of the Smith cartridge 10 either before or after the releasable seal 42 is removed and Smith makes no mention of it in his specification. However, this same gap becomes very significant when attempting to reproduce my own seal invention by bonding the frangible seal 24 of Galbierz to the polyethylene layer 40 and/or the polyester layer 46 of Smith in place of Smiths releasable seal 42.

When the frangible seal 24 of Galbierz is bonded to the polyethylene layer 40 of Smith instead of the releasable seal 42, the depression created in the end disk 32 by the openings 44 and 38 will also leave a gap between the valve disk layer 46 of Smith and the frangible seal 24 of Galbierz which prevents the Galbierz seal 24 from bonding to the central valve area 50 of the valve disk layer 46 of Smith.

When the combination of the Smith end disk 32 and the Galbierz frangible seal 24 is bonded over the interior opening of a cartridge nozzle and the cartridge is pressurized, the flowable material will pass out through the vaned valve openings 52 and continue to fill the unbonded space between the valve disk layer 46 and the frangible layer 24 in the central valve area 50 until the frangible layer 24 bursts. When the Galbierz frangible layer 24 bursts in this undefined manner, portions of the broken frangible layer 24 can break off and contaminate the flowable material as it is dispensed out the cartridge nozzle. In a functional sense the Galbierz - Smith seal combination performs no differently than the Galbierz seal performs alone, along with its inherent drawbacks as I detail in the specification of my own application.

Overcoming this drawback would require the bonding of the frangible seal 24 of Galbierz to both the raised polyethylene layer 40 and the depressed central valve area 50 of the polyester layer 46 of the end disk 32 of Smith simultaneously. This requirement presents numerous problems that the novel design of my

invention eliminates.

Currently manufacturers die cut individual cartridge nozzle seals from long continuous rolls that contain all the necessary layers of seal material such as foil, polymers, adhesives, or adhesive heat seal layers in the same manner as my own seal invention. The individual layers are bonded together by pressure rollers on high speed web coating and converting equipment to produce the multi layered seal material at the lowest possible cost, again in the same manner as my own seal invention.

To ensure the complete bonding of the frangible layer 24 of Galbierz to both the raised polyethylene ring 40 and the depressed central valve area 50 of the Smith end cap 32 simultaneously, requires that the frangible layer 24 would have to be compressed and held against the Smith end disk 32 with the use of a flexible compression device such soft rubber until the bonding adhesive either cooled, cured, or dried. This is a time consuming process that cannot be achieved on continuous high speed converting equipment and would add substantially to the unit cost of each seal.

It is stated on Pg. 5 lines 3 thru 7 of the rejection that in reference to claim 3 of my application that "It would have been obvious to one of ordinary skill in the art to have combined dispensing nozzle of Galbierz and attached it to the end of the dispensing device of Smith and allow the disk to seal the interior opening of the nozzle by at least one layer of adhesive instead of the rim 30 in order to provide better control of the flow pattern of the material being dispensed."

This statement does not clarify as to what portion of the end disk 32 of Smith's dispensing device 10 should Galbierz's nozzle 15 flange 26 and frangible seal 24 be bonded ? This is crucial. As shown in drawing Fig. 1 of the Galbierz patent, the nozzle 15 is inserted into an opening 28 in the end cap 27 from the interior of the cartridge 30 and is held in place by a flange 26. The nozzle cannot be widened because the cartridge would not fit into standard size application guns. The flange 26 also provides a flat surface area necessary for the frangible seal 24 to bond to. As additionally shown in Fig. 1 the relative outer diameter of the flange 26 is substantially less than the width of the end cap 32 of Smith's dispensing device 10. In order to attach Galbierz's nozzle 15 to the end of Smith's dispensing device 10 the outer width of the flange 26 would have to be either; 1. Narrow enough to fit inside the depressed central valve area 50 of the

end cap 32; 2. Be wide enough to be bonded to a portion of the raised polyethylene ring 40 or; 3. Be wide enough to be bonded to the entire ring 40 and extend to the rim 30, which would allow the flange 26 with the bonded frangible seal 24 and end disk 32 to be attached directly to the body 24 of the Smith dispenser 10.

Since this is not clarified in the rejection it is necessary to analyze the performance characteristics each of the choices. If the nozzle 15 and frangible seal 24 of Galbierz were bonded to the polyester valve layer 46 of Smith with the outer diameter of the seal 24 and flange 26 with attached nozzle 15 fitting within the recessed center area 50 of the cutouts of the paperboard 36 and polyethylene 40 layers the flange would cover over the x shaped valve openings 52 which would prevent the valves 52 from bursting when the cartridge was pressurized. If the flange 26 with attached seal 24 and nozzle 15 were wide enough to be bonded to only a portion of the raised polyethylene ring layer 40 or, was wide enough to be bonded to the entire ring 40 and extend to the rim 30 of the dispenser body, bonding the frangible seal 24 to the depressed central valve area 50 of end disk 32 presents considerable drawbacks because of the combined thickness of the paperboard layer 36, adhesive layer 48, and polyethylene layer 40 forming the raised outer ring assembly as previously disclosed herein.

It is stated on Pg. 5 lines 10 thru 19 and Pg. 6 lines 1 and 2 of the rejection that in reference to claims 5 and 6 in my specification that "Smith discloses a dispenser template layer side of the seal is bonded to the peripheral interior surface area (rolled rim 30) but does not disclose a nozzle at the end of the dispenser in which the seal is in the interior opening of the nozzle of the cartridge covering the interior opening of the nozzle. Galbierz discloses a nozzle which can be attached to the end of the dispenser 10 and also discloses a seal which is placed in the interior opening of the nozzle of the cartridge covering the interior opening of the nozzle in Fig. 1." and that, "It would have been obvious to one of ordinary skill in the art to have combined the dispensing nozzle of Galbierz and attached it to the end of the dispensing device of Smith and allow the frangible layer side of the seal to close the interior opening of the nozzle instead of the rim 30 in order to eliminate seepage at the connection between the spout and the cartridge after the seal is broken as taught by Galbierz."

Attempting to reproduce my frangible seal invention by substituting Smith's end disk 32 for the template layer of my seal and then bonding Galbierz's frangible seal 24 and nozzle 15 to the exterior of Smith's end disk 32, will produce a material arrangement that differs completely from the structural make up of my seal and will fail to function properly for reasons previously disclosed herein. If the frangible seal 24 of Galbierz is bonded to the interior of Smith's end disk 32 and the nozzle is bonded to the exterior of the end disk 32 the same problem of how to simultaneously bond the seal 24 to both the raised polyethylene layer 58 and the depressed central valve area 50 of the polyester valve layer 46 as previously disclosed herein, again presents itself.

It is stated on Pg. 6 lines 8 thru 13 of the rejection that in referring to claims 9 and 10 in my specification that "Smith further discloses multiple layers of seals on the end disk and that it would have been obvious to one of ordinary skill in the (art) to arrange the seals in any order desired. The number of the template and frangible layers in a disk could vary depending on how rigid the manufacturer needs its seal to be. Furthermore, if the disk consists of more than two seals, it would be obvious to one of ordinary skill in the art to have bonded the two outer layers on both sides of a middle layer."

As previously disclosed herein and disclosed in Smith's specification, the polyethylene layer 40, the paperboard layer 36, the polyester layer 46 and the polyethylene layer 58 together make up the end cap 32, which is a structural component of Smith's cartridge 10 and do not constitute seal layers. The only component of Smith's cartridge dispenser 10 that is categorized as a seal is the peelable strip 42 as Smith clarifies in Col. 3 line 30 thru 50.

It is stated on Pg. 6 in line 14 and 15 of the rejection that in reference to claim 11 of my application that "Smith further discloses the frangible layer (42) is bonded to the template layer by at least one layer of adhesive (col 4, lines 38-40)."

This statement categorizes Smith's peel able seal 42 and end cap 32 combination as being of the same structural make up as my frangible seal invention which is inaccurate. Again as previously described

herein and disclosed in the Smith specification in Col. 4 lines 49 thru 51, Smith's peelable seal strip 42 is bonded to the valve layer 46 with a releasable adhesive. The seal 42 would not break open in either the configuration of the valve openings 52 or along the inner circular boundary line where the layers 40 and 36 are bonded to the valve layer 36 when the cartridge 10 was pressurized. The increasing pressure of the cartridge 10 contents being forced out through the valve openings 52 would force the seal 42 to separate from the valve disk layer 46. Additionally, lines 38 thru 40 in Col. 4 state that the hot melt luting secures the periphery of polyethylene disk 58 to the inside surface of body 24 thus securing the composite disk 32 in place. The adhesive 34 does not bond the seal 42 (frangible layer) to the end disk 32 (template layer).

It is stated on Pg. 7 line 1 thru 3 in the rejection that in reference to claim 12 of my application that "Smith further discloses the adhesive layer 48 in fig 3 is only applied where bonding is needed, and that the cut out void configuration of the breaking pattern of the template layer center is free of adhesive."

This statement is inconsistent. It is stated on Pg. 3 lines 8 and 9 of the rejection that the only breaking pattern in layer 46 of the Smith patent were the 3 x shape slits 52 in layer 46 as shown in Fig. 3, yet in this statement circular opening 44 in layer 40 is again being categorized as a fourth breaking pattern that would break open at the inner circular boundary where the paperboard layer 36 and polyethylene layer 40 composite are bonded to the template layer 46 when the cartridge 10 is pressurized.

The only purpose of adhesive layer 48 is to bond the stiffening paperboard layer 36 to the polyester valve disk layer 46 as Smith discloses in Col. 3 lines 44 thru 50. Referring to the boundary where the center valve disk area 50 is created by the center holes 44 and 38 in the polyethylene layer 40 and the paperboard layer 36 as a breaking pattern is inaccurate and structurally differs from to the cut out void breaking pattern configuration of the template layer of my seal invention.

The valve disk layer 46 could not break open along the inner circular boundary line where the paperboard stiffening layer 36 and polyethylene shield layer 40 composite ends when the cartridge 10 is pressurized because the valve disk layer 46 does not contain a circular slit or other weakening means at that boundary. Nowhere is it stated in the Smith patent that the circular opening is also a slit valve as clarified by Smith in Col. 3 lines 65 thru 68 and Col. 4 lines 1 thru 8.

Additionally, attempting to cut a complete circular slit in the valve disk layer 46 in register with the circles 38 and 44 to create a weakened breaking pattern to allow the disk valve layer 46 to break open at the inner circular boundary, would at the same time, cause the circular center of the valve disk layer 46 to fallout during the cutting procedure or in later handling. If this drawback could be overcome, a further obvious drawback is that the central valve area 50 would simply burst out completely and contaminate the contents or clog the nozzle when the cartridge was pressurized.

It is stated on Pg. 7 lines 4 thru 12 in the rejection that in reference to claim 13 of my application that "Smith further discloses that the seal disk is bonded to the interior surface opening (rolled rim 30) by a food grade adhesive (34) but does not disclose a nozzle attached to the end of the dispenser 10." and that, "It would have been obvious to one of ordinary skill in the art to have combined dispensing nozzle of Galbierz and attached it to the end of the dispensing device of Smith and allow the disk to seal the interior opening of the nozzle by at least one layer of adhesive instead of the rim 30 in order to provide better continue flow attern of the material being dispensed as taught by Galbierz."

This statement is inaccurate. The end disk 32 of the Smith dispensing cartridge 10 is a structural component of the cartridge 10 and does not constitute a seal as previously disclosed herein and further clarified by Smith in Col. 3 lines 14 thru 36. The only seal component of Smith's cartridge is the peel able strip 42 as he describes in Col 4 lines 44 thru 54.

It is stated on Pg. 7 lines 13 thru 15 in the rejection that in reference to claim 14 of my application that "Smith further discloses that the adhesive layer 48 in fig 3 is only applied where bonding is needed, and the cut out void configuration of the breaking pattern of the template layer center is free of adhesive."

This statement is inaccurate. Based on this statement the central valve area 50 is again being categorized as a breaking pattern configuration that is created by the openings 44 and 38 in layers 40 and 36. The arrangement of materials in the Smith end disk 32 would not function in the manner stated if the frangible seal 24 of Galbierz is bonded to the end disk 32 of Smith. The adhesive layer 48 in the Smith end

disk 32 bonds the paperboard layer 36 to the polyester valve disk layer 46. The paperboard layer 36 and the polyethylene layer 40 are not, nor could they function as, a template layer that allows the polyester valve disk layer 46 to burst open at the inner circular boundary of the center openings 44 and 38. The cartridge contents would be forced out through the openings of the three x shaped vaned valve slits 52 that are cut completely through the valve disk layer 46 long before the internal cartridge pressure reached a point that would be sufficient to force the valve disk layer 46 to burst open at the inner circular boundary of the center openings 44 and 38. Even if the three x shaped valves were eliminated and the cartridge was pressurized enough to cause the polyester layer in the central valve area 50 to burst open within the confines of the openings 38 and 44, the polyester layer 46 would not tear open at the boundary of the openings 44 and 38. The polyester layer 46 would burst open in an undefined random manner anywhere within the confines of the template layer center valve area 50 and allow pieces to possibly break off and contaminate the dispensed product. The new and novel design of my seal invention prevents this.

It is stated on Pg. 7 lines 13 thru 15 of the rejection that in reference to claim 14 of my application that "Smith further discloses the adhesive layer 48 in fig 3 is only applied where bonding is needed, and the cut out void configuration of the breaking pattern of the template layer is free of adhesive.

This statement is inaccurate. Smith states in Col. 1 lines 66 thru 69 and Col. 2 lines 1 thru 21 that the center openings 44 and 38 are removed from layers 40 and 36 to leave a surface area on the valve disk layer 46 that is wide enough to allow sufficient spacing between the three x- shaped valve openings 52 so that when the contents are dispensed out through the valves they cover a large area of the sandwich bun. The paperboard layer 36 and the polyethylene layer 40 containing the center openings 44 and 38 are bonded to the valve disk layer 46 by the adhesive layer 48 to provide stiffness to the end disk 32 so it can be handled by automated assembly equipment as Smith explains in Col.2 lines 1 thru 6. Layers 36 and 40 do not function as a template layer that would allow the center area 50 of the valve disk layer 46 to break open when the cartridge was pressurized. The cartridge 10 contents would dispense out through the valve openings 52 before pressure sufficient to haphazardly burst the valve disk layer 46 in the center valve area 50 was reached.

It is stated on Pg. 7 lines 16 thru 18 that in referring to claim 15 of my application that "Smith further discloses that the frangible layer is bonded to the template layer by non adhesive (heat seal) means such as cladding or fusion bonding and the like (col 4, lines 44-55).

This statement is incorrect. In Col. 4 lines 44 - 45 Smith states that foil strip 42 is is preferably provided with a heat seal or pressure sensitive coating on its underside. The heat seal coating is a class of adhesive that is activated by heat. This type of adhesive is well known and widely used in manufacturing and industry. It is also referred to as hot melt adhesive of which there are many different types available to bond various materials. Smith further clarifies this in Col. 4 lines 45 thru 51.

It is stated on Pg. 8 lines 9 and 10 in the rejection that in reference to claim 17 of my application that Smith discloses "along with seal (fig 3)"...

This is inaccurate. Smith clearly states in Col. 3 line 15 that valve disk layer 46 together with layers 40, 36, 48, 60, and 58 make up the end disk 32 of the cartridge 10 which is a structural component of the cartridge 10 and does not constitute a seal. Smith clearly states in Col. 4 lines 44 thru 54 and Col. 6 lines 31 thru 33 that the only component of his invention that functions as a seal is the releasable foil strip 42. The releasable strip 42 is bonded to the valve disk layer 46 and the polyethylene protection disk layer 40 with a releasable adhesive that allows the seal strip 42 to be removed from the end disk 32 prior to the pressurization of the cartridge 10 and is only present to keep the valve area 50 clean and free from

It is further stated on Pg. 8 lines 9 thru 11 of the rejection that in reference to claim 17 of my application that Smith discloses "along with seal (fig 3) being of sufficient weakness to allow the seal (layer 46) to break open only in the configuration of the breaking pattern (x-shapes in layer 46 in fig 3)."

This is inaccurate. Smith clearly states in Col. 3 Lines 54 thru 59 that the x shapes are valve openings 52. These valve openings 52 are formed by a pair of intersecting slits made in a crosshair pattern that intersect at their centers forming an x shape. Theses slits are cut completely through the valve disk

layer 46 and do not break open when the cartridge 10 is pressurized by advancing the plug 26 with the dispensing gun 14. The valve openings 52 spread open when the peelable seal 42 is removed and the cartridge 10 is pressurized. The vaned valve openings 52 then return to a closed position to prevent leaking when the pressure is released as Smith further clarifies in Col. 3 Line 68 and Col. 4 Lines 1 thru 8.

It is stated on Pg. 8 lines 12 thru 21 and Pg. 9 lines 1 and 2 that "Smith discloses an improved multi layered self opening closure seal (fig 3) for sealing over the interior opening (open end of dispensing gun 14, fig 1), cartridge (10) constructed of a first layer of unbroken (42, fig. 1) frangible material (42, made of foil) that is bonded to an additional layer (40) of material that contains at least one cut (opening 44) forms a breaking pattern (circle) that turns the additional layer (layer 46) into a break and tear template layer (layer 46) and that when to the first frangible layer (42) strengthens the surface area of the first frangible layer (42) everywhere except in the area of the breaking pattern (breaking pattern of x shapes in 46) by leaving only the first frangible layer (42) covering over the cut configuration of the breaking pattern (x shapes in layer 46, and circle in layer 36) of the additional template layers (40 and 46) which leaves a weakness in the multi layered seal only in the area of the breaking pattern (circle in layer 40 and x-shapes in layer 46)."

This correlation is inaccurate. Smith states in Col.4 lines 44 thru 60 that the end disk 32, (Fig. 3) is the structural end component 32 of the cartridge 10 and does not constitute a seal. The peelable strip 42 does not burst open when the cartridge 10 is pressurized. It is bonded to the end disk with a releasable adhesive that allows the strip to be removed before the cartridge contents are dispensed. Additionally, Smith states in Col. 2 lines 63 thru 65 that the dispensing gun 14 is not part of his invention. The title of the Smith patent is COMPOSITE DISK VALVE FOR DISPENSING CARTRIDGES. As previously stated neither the end disk 32 nor the releasable seal 42 is attached to the dispensing gun 14 in any way. Furthermore, the opening 38 in paper board layer 36 and the opening 44 in polyethylene layer 40 either singularly, or in concert, do not constitute a breaking pattern in the end disk 32. The paperboard layer 36 is bonded to the valve disk layer 46 only to provide stiffness to the end disk 32 so that it can be handled by automated assembly equipment as Smith clarifies in Col. 3 lines 21 thru 43. The polyethylene layer 40 is

bonded to the paperboard layer 36 to prevent contamination of the layer 36 and to provide a surface that allows for the easy removal of the peelable strip 42. Additionally the end disk 32 does not strengthen the peelable seal 42 in either the area of the three x shapes 52 or at the boundary of the circle in layer 36 nor does the presence of the peel able seal 42 leave a weakness in the end disk 32 in either the valve disk area 50, or at the at the inner circular edge of the polyethylene layer 40 and paperboard layer 36 composite.

It is stated on Pg. 9 lines 5 thru 8 that " Smith further discloses in fig. 3 wherein the bonding means bonding the frangible layer to the template layer (col 3, lines 34 - 40) includes a voided area (circle of disk 40) that duplicates the cut out void configuration of the breaking pattern (rest of the disks have the same void configuration)."

This statement does not accurately describe Smith's end disk 32. Smith states in Col. 4 lines 44 thru 49 that the adhesive coating is on the entire peelable strip 42 in both the area of the circle of disks 40 and 36 (valve disk area 50) and also in the area where it adheres to the polyethylene disk 40. There is no voided area in the adhesive layer on the peelable strip 42.

It is stated on Pg. 9 lines 9 thru 12 that "Smith further discloses that the cut (x-shapes, fig 3) out void configurations of the breaking pattern of the template layer creates a weakness in the seal only in the area of the breaking pattern (x-shapes) by leaving only the first frangible layer (42) covering over the cut out (x-shapes) of the breaking pattern."

This statement is incorrect. The peelable strip 42 and end disk 32 combination is not weakened in the area of the self closing x shaped valves 52 when the peelable strip is attached. The peelable strip 42 would simply separate form the polyethylene layer 40 (and the polyester valve layer 46 if bonded to it) when the catridge 10 was pressurized because the strip is coated with a releasable adhesive as Smith discloses in Col. 4 lines 44 thru 54.

It is stated on Pg. 9 lines 13 thru 19 that "Smith further discloses that the breaking pattern (fig 3,

layer 46) configuration includes at least one unbroken area (52) that connects at least one the central portion of the seal that would break open outwardly when the force of the contained flowable material of the cartridge dispensing out of the cartridge when the seal breaks open to the annular portion of the seal remaining bonded (col 3, lines 38-40) to the peripheral interior surface area around the interior opening (rim 30) of the cartridge and keeping the central portions from breaking off and contaminating the material when dispensed."

This statement is inaccurate. Smith states in Col. 3 lines 38 thru 40 that, "Heat sealing extrusion lamination, adhesive securement or any other suitable means may be used to secure disks 36 and 40 together." The adhesive that bonds the paperboard stiffening layer 36 to the polyethylene protection layer 40 has nothing to do with the petals or vanes 56 of the valve openings 52. The petals or vanes 56 of the three valves 52 do not break open. Smith specifically calls for the use of polyester for the valve disk layer 46 because it is a resilient material that has a memory characteristic that causes the vanes to return to their closed position when the cartridge pressure is removed as he states in Col. 2 lines 7 thru 11. The petals or vanes 56 do not remain open wherein the flaps of my seal invention do.

It is stated on Pg. 9 line 20 that "Smith further discloses that the frangible layer is foil sealing strip (col 3, line 35)."

This comparison is inaccurate. The foil sealing strip 42 is not frangible. It is bonded to the end disk 32 with a releasable adhesive that allows the seal 42 to be easily peeled from the end disk when the cartridge 10 is to be used as Smith discloses in Col.4 line 49 thru 52.

It is stated on Pg. 9 line 21 that "Smith further discloses that the template layer is a polyester disk."

This comparison is inaccurate. Smith calls for polyester for layer 46 because of its stiffness and good resilient memory which allows the vanes 56 of the three valves 52 to open when the pressure of the cartridge reaches a certain point and then return to the closed position when the cartridge 10 pressure is

relieved as Smith discloses in Col. 2 lines 7 thru 11. This feature is central to the proper functioning of the Smith device unlike the flaps of my own invention that remain open after the seal bursts. If a layer of polyester with the stiffness of the valve disk layer 46 of Smith was used for the template layer of my frangible seal invention, a higher cartridge pressure and more effort would be required to keep the flaps open to continuously dispense the contents Additionally the polyester layer 46 requires the peelable seal layer 42 to be removed to allow the valves 52 to open to dispense the cartridge 10 contents and does not constitute a template layer as Smith discloses in Col. lines 49 thru 54.

It is stated on Pg. 10 lines 8 thru 13 that "Galbierz discloses a nozzle (15, fig 1) and frangible seal which can be attached to the end of the dispenser of Smith, with interior opening (21, fig 1) of the nozzle (15, fig 1) of the cartridge which would be perpendicular to the bore (23, fig 2) of the nozzle (15, fig 1) providing mean for bonding an improved frangible seal (24) over the interior opening (opposite end of 21, fig 2) of the nozzle (15, fig 2) of the cartridge."

This statement is unclear and does not specify how or where the frangible seal 24 and nozzle 15 of Galbierz is bonded to the disk end 32 of Smiths cartridge 10 in a manner that reproduces my pressure activated frangible seal as previously disclosed herein.

Presuming that what is meant on Pg. 10 lines 14 thru 18 is that "It would have been obvious to one of ordinary skill in the art to modify the dispensing cartridge "... instead of "It would have been further obvious to modify the dispensing gun of Smith by replacing the peel away seal with a frangible exterior layer bonded to an interior opening of a nozzle as taught by Galbierz in order to simplify the process for the user by eliminating the peel away step of the seal from the cartridge, and in order to provide better control of the flow pattern of the material being dispensed."

Replacing the peel away seal 42 of Smith's sauce dispensing cartridge 10 by permanently bonding the frangible seal 24 and nozzle 15 of Galbierz to Smith's end disk 32 in order to eliminate the peel away step of the seal will not simplify the process for users of the Smith food sauce cartridge dispenser 10.

Bonding Galbierz's seal 24 and nozzle 15 to the end disk 32 of Smith's cartridge 10 will produce the opposite result. The sauce will dispense out only through the single opening of the nozzle 15 end 21 which defeats the primary purpose of the three valves 52 of Smith's end disk 32 which is to dispense the sauce over a wide area and then for the valves 52 to close to prevent stringing of the contents when the cartridge 10 pressure is removed as Smith discloses in Col. 2 lines 7 thru 21. Additionally, it is not understood what is meant by "in order to provide better control of the flow pattern of the material being dispensed". A flow pattern is the various shapes and forms such as eddies or swirls etc. that any liquid or semi liquid will make as it flows in a tube or channel. The flow pattern of a liquid or semi liquid as it courses through a tube or channel can be controlled by various methods such as baffles, fins, or constrictors etc. Replacing the peel away seal 42 of Smith's sauce dispensing cartridge 10 with the frangible seal 24 and nozzle 15 of Galbierz will have no effect on what internal patterns the contained material may make as it flows out through the cartridge and nozzle before being dispensed. Nor it is understood why it would be necessary to control the flow pattern.

It is stated on Pg. 10 lines 19 thru 21 and Pg. 11 lines 1 and 2 that "It would have been further obvious to one skilled in the art to have the frangible layer of Galbrierz bonded to an additional strengthening layer (46) that contains at least one cut out void (circle) configuration that forms a breaking pattern (x- shapes in 46) that turns the strengthening layer into a break and tear template layer (46) in order to have a more rigid seal and strengthen the template layer during dispensing."

This statement does not accurately describe the components of Smiths end disk 32 nor how bonding the frangible seal 24 and nozzle 15 of Galbierz to Smith's end disk 32 would obviously reproduce the structure and performance of my frangible seal invention. There is no circle cut out of the layer 46 to create a void. The circle is created by the circles 38 and 44 that are cut out of the paperboard 36 and polyethylene 40 stiffening layers only. The circle and the x- shapes cannot both be breaking patterns at the same time.

The breaking pattern of my frangible seal invention is created by the void that is left after the same pattern is cut out of every layer of only the template layer. Excluding adhesives, there are only two layers in my

frangible seal invention, the frangible layer and the template layer. The reason for bonding the frangible layer to the template layer of my seal invention is to create a weakness in a defined configuration in the seal not to create a more rigid seal and additionally, the template layer does not strengthen the template layer.